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TITLE: Home audio video network with device control modules for incorporating legacy devices

•DATE-ISSUED: July 4, 2000

INVENTOR-INFORMATION:

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FIELD-OF-SEARCH: 709/220, 709/221, 709/222, 709/230, 709/253

PRIOR-ART-DISCLOSED:

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[Search Selected] [Search ALL]

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ART-UNIT: 278

PRIMARY-EXAMINER: Maung; Zarni

•ABSTRACT:

A method and system for providing seamless interoperability and integration between a
plurality of devices in a network using a common protocol, wherein at least one of the
devices is a legacy device which commmunicates with the network using a proprietary
protocol. When a legacy device is coupled to the network, one of the plurality of
devices on the network queries the legacy device via the proprietary protocol to
determine a set of basic capabilities supported by the legacy device. The set of basic
capabilities are then mapped from the proprietary protocol to a set of basic commands
from the common protocol. A control module is generated for the legacy device, wherein
the control module is based upon the set of basic commands. The set of basic
capabilites of the legacy device are then accessed via the control module, thereby
providing seamless interoperability and integration of the legacy device with the
plurality of devices.

23 Claims, 20 Drawing figures

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Lea; Rodger J.	San Jose	CA		

US-CL-CURRENT: 709/220; 709/230

CLAIMS:

What is claimed is:

1. A method for providing interoperability and communication between a plurality of devices in a network using a common protocol, the method comprising the steps of:

a) coupling a legacy device to the network as one of the plurality of devices wherein the legacy device communicates with the network using a proprietary protocol;

b) querying the legacy device using the proprietary protocol to determine a set of basic capabilities of the legacy device;

c) mapping a set of basic commands from the common protocol to the set of basic capabilities of the legacy device;

d) generating a control module for the legacy device, wherein the control module is based upon the set of basic commands, and wherein the generating is performed by an intelligent device of the plurality of devices in the network; and

e) accessing the set of basic capabilities of the legacy device to provide interoperability and communication between the legacy device and the plurality of devices by accessing the legacy device via the control module.

2. The method of claim 1 wherein steps b) through d) are performed by a device manager executing on the intelligent device.

3. The method of claim 1 wherein the control module is executing on one of the plurality of devices in the network.

·4. The method of claim 1 wherein the legacy device is accessed by the

plurality of devices via the control module, wherein the plurality of devices communicate with the control module using the common protocol and the legacy device communicates with the control module using the proprietary protocol.

5. The method of claim 1 wherein step b) includes the step of communicating with the legacy device using the proprietary protocol to determine the set of basic capabilities.

6. The method of claim 1 wherein the legacy device is an analog device.

7. The method of claim 1 wherein the network includes an IEEE 1394 bus and wherein the control module is configured to function in accordance with the IEEE 1394.

8. The method of claim 1 wherein the control module provides a standardized control interface for the legacy device.

9. The method of claim 8 wherein the standardized control interface includes software code which provides a predefined set of interoperability interfaces for the legacy device which enable communication between the legacy device and the plurality of devices in the network.

10. A home audio visual network including a plurality of devices coupled to a bus, wherein one device is a host device having a processor coupled to a computer readable memory, the memory containing computer readable instructions which when executed implement a method for providing interoperability and communication between the devices, the method comprising the steps of:

a) querying a legacy device, of the plurality of devices, via a proprietary protocol of the legacy device to determine a set of basic capabilities supported by the legacy device;

b) mapping a set of basic commands from a common protocol to the set of basic capabilities of the legacy device;

c) generating a control module for the legacy device, wherein the control module is based upon the set of basic commands, and wherein the generating is performed by an intelligent device of the plurality of devices in the network; and

d) providing interoperability and communication between the legacy device with the plurality of devices by the plurality of devices accessing the set of basic capabilities of the legacy device using the control module.

11. The home audio visual network of claim 10 wherein steps a) through c) of the method are performed by a device manager executing on the host device.

12. The home audio visual network of claim 10 wherein the control module executes on one of the plurality of devices in the network.

13. The home audio visual network of claim 11 wherein the legacy device is accessed by the plurality of devices via the control module, wherein the plurality of devices communicate with the control module using the common protocol and the legacy device communicates with the control module using the proprietary protocol.

14. The home audio visual network of claim 10 wherein step b) of the method includes the step of communicating with the legacy device using the proprietary protocol to determine the set of basic capabilities.

15. The home audio visual network of claim 10 wherein the legacy device is an analog device.

16. The home audio visual network of claim 10 wherein the bus of the network is an IEEE 1394 bus and the control module is configured to IEEE 1394.

17. The home audio visual network of claim 10 wherein the control module provides a standardized control interface for the legacy device and wherein the control interface includes software which provides a predefined set of functionality interfaces for the legacy device which enable communication between the legacy device and the plurality of devices in the network.

18. A home audio visual network including a plurality of devices coupled to a bus, wherein one device is a host device having a processor coupled to a computer readable memory, the memory containing computer readable instructions which when executed implement a method for providing interoperability and communication between the devices, the method comprising the steps of:

a) querying a legacy device, of the plurality of devices, via a proprietary protocol of the legacy device to determine a set of basic capabilities supported by the legacy device;

b) mapping a set of basic commands from a common protocol to the set of basic capabilities of the legacy device;

c) generating a control module for the legacy device, wherein the control module is based upon the set of basic commands, and wherein the generating is performed by an intelligent device of the plurality of devices in the network; and

d) providing interoperability and communication between the legacy device and the plurality of devices by the plurality of devices accessing the set of basic capabilities of the legacy device using the control module;

wherein steps a) through c) are performed by a device manager executing on the host device.

19. The home audio visual network of claim 18 wherein the legacy device is accessed by the plurality of devices via the control module, wherein the plurality of devices communicate with the control module using the common protocol and the legacy device communicates with the control module using the proprietary protocol.

20. The home audio visual network of claim 18 wherein step b) of the network includes the step of communicating with the legacy device using the proprietary protocol to determine the set of basic capabilities.

21. The home audio visual network of claim 18 wherein the bus of the network is an IEEE 1394 bus and the control module is configured to function with IEEE 1394.

22. The home audio visual network of claim 18 wherein the control module provides a standardized control interface for the legacy device and wherein the control interface includes software which provides a predefined set of interoperability interfaces for the legacy device which enable communication between the legacy device and the plurality of devices in the network.

23. An apparatus method for providing interoperability and communication between a plurality of devices in a network using a common protocol, the method comprising the steps of:

a) means for coupling a legacy device to the network as one of the plurality of devices wherein the legacy device communicates with the network using a proprietary protocol;

b) means for querying the legacy device using the proprietary protocol to determine a set of basic capabilities of the legacy device;

c) means for mapping a set of basic commands from the common protocol to the set of basic capabilities of the legacy device;

d) means for generating a control module for the legacy device, wherein the control module is based upon the set of basic commands, and wherein the generating is performed by an intelligent device of the plurality of devices in the network; and

e) means for accessing the set of basic capabilities of the legacy device to provide interoperability and communication between the legacy device and the plurality of devices by accessing the legacy device via the control module.